Social Capital Predictors of Academic Success

Honors Thesis in Policy Analysis and Management

Christy Johanson Paul

Cornell University

May 2007

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Introduction

The Situation Today. In the continuously dynamic realm of politics, the topic of "education" is a never-ending subject of discussion. How can we provide the best education to our nation's children? How can we keep up with the standards of fellow industrialized nations? How may we provide the same level of education to all children, rich or poor, rural or urban, in all stretches of the country? If these questions were simple to answer, we would fix our nation's education "problems" and move forward with education reform as a topic of the past. However, this is far from the reality. Legislators, parents, teachers, administrators, and public interest groups have all suggested their own interpretations of what promotes a better educational system. And whether it is smaller class sizes, more highly educated teachers, less bureaucracy, or better funding, each suggestion has its own merits but is far from conclusive.

A majority of contemporary education research focuses on a few select factors as promoting better educational quality. Class size, or more specifically student-teacher ratio, has historically been first and foremost on this list. Several studies have demonstrated the importance of smaller student-teacher ratios in promoting student achievement (see Lewit, 1997 and Mosteller, 1995). Others have demonstrated that funding may be of significance—that students in states with higher education funding may fare better than those in states with less—but this finding is highly contested and often refuted (Elliot, 1998; Ludwig & Bassi; 1999; Pincus & Rolph, 1986). Most recently, with the advent of the *No Child Left Behind Act*[1] the focus has turned to schools, and more specifically the individual teachers, as determinants of students' educational success.

But even these many variables do not come close to explaining the vast variation in outcomes from school to school, district to district. There are relatively highly-funded schools that produce worse outcomes than schools with relatively less funding. Lower class sizes do not unequivocally lead to better test scores. The size of a high school is not necessarily related to its graduation rate. And the list goes on.

We would hope that the unexplained variation that remains after accounting for known relationships is not just a function of randomness or chance. What discouraging news this would be, to conclude that a large part of the variation in school outcomes is simply unexplainable.

To the contrary, perhaps the issue is that many of the other determinants of school success are merely less concrete, less easily captured by conventional measures of performance predictors. The question is: What are these additional factors, and how do they relate to school success?

[1] See Appendix I for a full description of the *No Child Left Behind Act.*

The Focus of This Study

The study will investigate the widely accepted predictors of school success, and more importantly, delve into additional theories which attempt to describe some of the variation that remains. Instead of comparing outcomes in all schools, the scope will be limited to high schools for various reasons. Due to systematic differences between primary and secondary schools, it would be ill-advised to include all school levels in the same input-output model. As we well know, elementary school students remain the same classroom, with the same teacher, for at least one year. High school students generally change classrooms and teachers multiple times during the day. We could not expect the effect of class size, which would remain constant for elementary school students and vary for high school students, to be identical in both cases.

Additionally, it may be argued that high schools are more greatly affected by varying levels of teacher quality and social influences than are their neighboring primary schools. High school teachers must possess greater subject-area expertise, as the complexity of each subject increases. This indicates that varying levels of teacher quality, already proven to influence achievement in lower grade levels (Rockoff, 2004), may be of even greater influence in high school. We may also expect the influence of contextual characteristics to be more significant in high schools, given the commonly-held notion that older students are more aware of their family's social and economic position.

Finally, high schools offer additional predictive and outcome variables not available for primary schools. Graduation and retention rates are reported for high schools, while only test scores are available for elementary schools. The same may be said of extra-curricular involvement. For instance, athletic participation is often affiliated with a student's school during the high school years, but associated with community organizations and clubs in the elementary school years. The difference allows us, when the sample is constrained to high schools, to tie the variable for athletic participation to a given school versus a broader region.

Conventional Measures of School Outcomes

When referring to "school outcomes" or "school success," researchers and policy makers nearly always rely on one well-loved indicator: standardized test scores. Test scores have many advantages contributing to their popularity. Standardized tests, especially since the passage of *No Child Left Behind*, are applied in essentially the same way as a census. All students must take the tests; thus results are generally distributed normally and do not suffer from systematic bias error. By mere

definition, tests are designed to assess what students have learned. We would hope that, assuming they are created and administered appropriately, they do indeed provide some measure of students' academic progress. Finally, it is commonly believed that standardized tests are, at least to some degree, predictive of future academic success. Of particular interest to the study at hand is a recent report published by the Oregon Department of Education, linking state test scores to college grades. Tenth-grade state assessment scores were found to be positively correlated with first-year college grades for 6,082 Oregon students, entering the Oregon University System (OUS) in the fall of 2001 (Tell et. al., 2003).

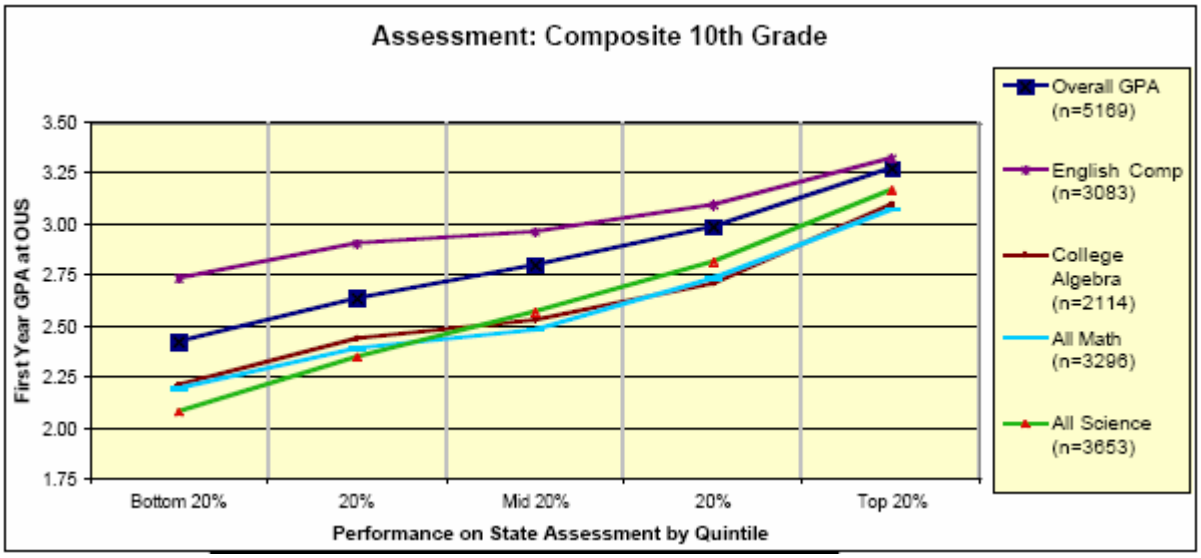


Figure 1. "Performance on Composite 10th Grade Benchmark Assessments by Quintile and First-Year College GPA at OUS (Math Knowledge and Skills, Problem-Solving, Reading, and Writing)." Illustrates the relationship between state assessment score ranges and GPA, both overall and by general subject area. (Tell et. al., 2003, pg. 49).

However, despite the various advantages of test scores, they are but a part of the story; it is presumptive to assume that scores alone reflect the "success" of a school. Some schools may focus more on test-taking practice and produce better scores than other schools whose students differ only in their test-taking ability. Acknowledging these limitations, it is useful to use additional measures, such as graduation rates, to measure how well high schools are serving their students.

Proven Associations. Two main types of factors are generally seen as the primary determinants of successful student outcomes in schools: socioeconomic factors and characteristics of the school. It is generally agreed that higher percentages of ethnic/racial monitories, lower median income, and lower education levels of parents are associated with worse academic outcomes. Smaller class sizes and more highly educated teachers are assumed to promote better school outcomes.

Other Possible Factors

Community Integration. A plethora of recent literature has indicated a link between social capital and school outcomes (such as Coleman, 1988; Furstenberg, 1995; Israel et. al., 2001; and Putnam, 2000). Operationalized in multiple forms, social capital refers to community integration: the degree to which individuals are involved in different realms of their community (first formal definition attributed to Coleman, 1988). From involvement in athletic leagues, to church attendance, to political participation, more involvement and integration has been demonstrated to be related to better outcomes for students (Putnam 2000). By using survey results from high school principals in the state of Oregon, this possible link will be explored.

Parental Involvement. Conceptually, we would expect greater parental involvement to promote better outcomes in their children's schools. Greater involvement increases school and teacher accountability, provides schools with more available human and social capital, and may stimulate higher expectations for student performance (Fan & Chen, 2001 and Sui-Chu & Willms, 1996).

Student Involvement. Unlike parental involvement, the possible link between student involvement and better school outcomes is not self-evident. Sports and academics seem so unrelated as to have little relationship between one another. However, research has frequently shown a possible link between the two (Guest & Schneider, 2003; Videon, 2002; Broh, 2002) and will thus be further explored in the pages that follow.

District Characteristics. District characteristics are rarely explored in terms of their impact on school outcomes. It seems to be assumed that the bureaucratic organization that encompasses schools has little impact on the students themselves. However, the many, sometimes unrecognized, roles of districts indicate a possibility that such organization does influence outcomes. Does district size influence the academic success of its high schools' students? Is district location an influential factor? These questions will be explored further.

Background and Theories

Expected Predictors

School Factors

Of all school characteristics, class size is most frequently noted as a significant determinant of student achievement. Indeed, 70% of the general public believes that smaller class sizes would "result in big improvements for public schools (Lewit & Baker, 1998)." The public belief seems logical: students in smaller classrooms may receive more attention, more individualized lessons, and thus progress more quickly than students in larger classrooms. Actual study results have varied. Blatchford and Mortimore (1994) found a "firm link between class size and educational attainment," but *only* in the early grades and for class sizes of less than 20 students.

One of the most comprehensive studies in the topic of class size was conducted in Tennessee, from 1985 through the early 1990s. This controlled, longitudinal study of 80 schools, 330 classrooms, and 6500 students, found students from smaller classrooms (13-17 pupils) exhibited greater academic improvements than students from average-sized classrooms (22-25). This positive effect was noticed to be particularly large for minority students. While the reductions in class size had been focused on grades K-4, the "Tennessee Study" found that the benefits of smaller class size persisted, when students returned to normal-sized classrooms in later grades (Mosteller, 1995).

The qualifications of teachers present a second factor in determining students' academic success. Analyzing a ten-year span of test scores from approximately 10,000 students of nearly 300 teachers in New Jersey, Rockoff (2004) found teacher quality to be of positive significance. For grades K-6, a one-standard-deviation increase in teacher quality (measured by teacher experience) was associated with a 0.1 S.D. increase in test scores on reading and math examinations. Despite these findings, Rockoff warns that overall "teacher quality" is difficult to measure, for it includes several unobservable and unquantifiable characteristics.

Along similar lines, it has been determined that, while more school funding does not necessarily promote better outcomes, when that funding is spent on more qualified teachers the influence is significant. More highly educated teachers, using effective teaching techniques, tend to produce higher student achievement (Elliot 1998).

Demographic Factors

Socioeconomic status (SES), which incorporates measures of both income and education level, is frequently noted as a significant predictor of students' academic outcomes. Students who

come from more educated, wealthier families consistently experience better success in school than their lower SES peers (Walker et al. 1994).

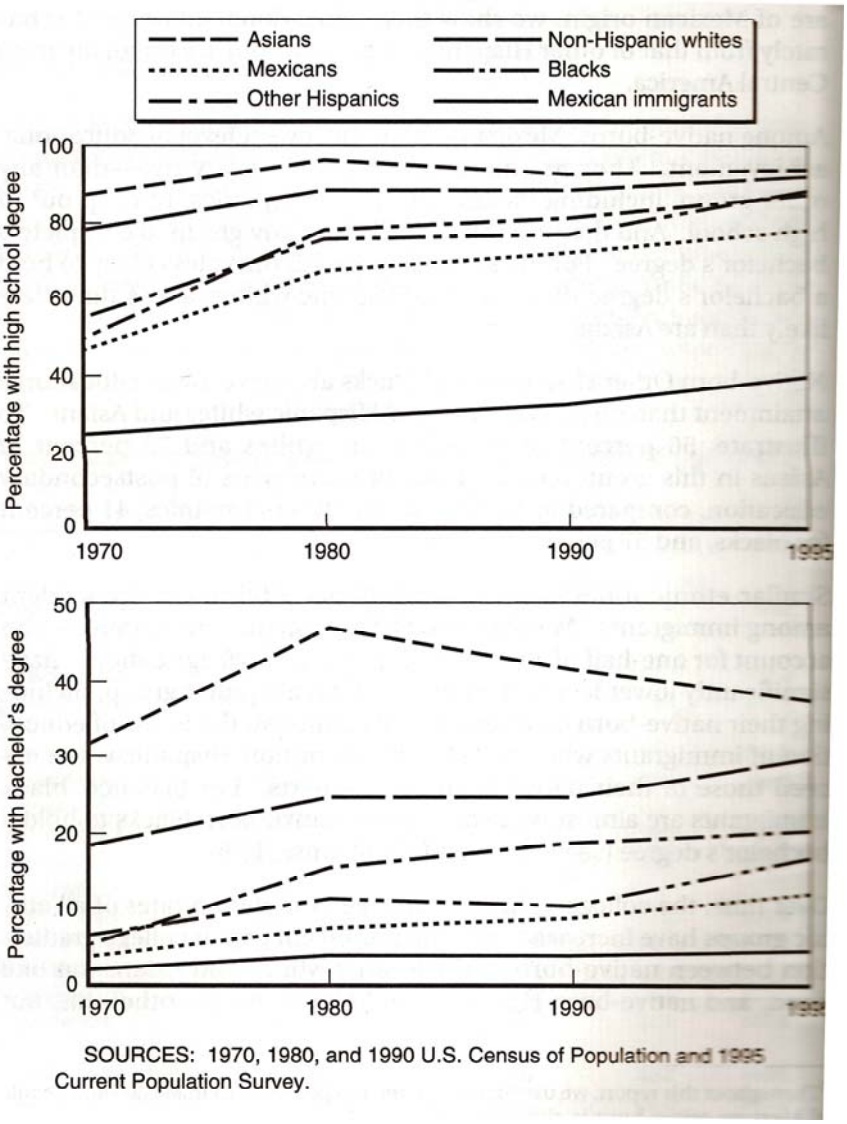


Figure 2. Academic Achievement by Race. Shows U.S. high school and college completion rates by race, according to census data from the past 30 years. (Vernez, Krop, & Rydell, 1999, pg. 6).

Most generally, higher income can provide better living standards for the children of the household, which surely promote better outcomes in all realms of the child's life (education, health, safety, etc.). Higher income children are likely to have more learning resources at their disposal, in turn providing them with an inherent advantage relative to their lower-income peers. This disparity is apparent from the first year of school: poorer children have less exposure to books and stimulating toys, and enter elementary school less with developed language skills (Walker et al. 1994).

The education level of parents likely influences outcomes in much the same way, providing some students with more academic resources, access to human capital, and encouragement from the start. Parental education also may promote better student outcomes with the added affect of raising academic expectations.

Racial and ethnic minority status is also often considered to influence academic achievement within a given school or region (see Figure 2.). African American and Hispanic students tend to reach lower levels of academic achievement than non-minority students; Asian students perform slightly higher. However, this is frequently a result of the colinearity that exists between minority status and lower SES, with SES seen as the more significant predictor of the two.

Related to ethnic minority status is the issue of a student's primary language. This is a recurring limitation of studies which include "Hispanic" in its specifications. Racial/ethnic groupings rarely measure for language preference or nativity. Research consistently shows that students who are non-native English speakers (referred to as ESL- English as a Second Language) have less success in the U.S. public school system, than their same-race, second generation peers (Vernez, Krop, & Rydell, 1999).

School District Characteristics

In the discussion of the role of physical, human, and social capital in determining academic success, the characteristics of school districts are an interesting variable to consider. Districts are often the key player in hiring and placing teachers in specific schools (human capital) and in determining the ideal distribution of resources among their schools (physical capital) (Hightower et. al. 2002). It also seems logical that district characteristics and policies may influence the community support, parental involvement, and student involvement (proxies for social capital).

Roles of School Districts. In order to examine school districts as a factor towards educational quality, we must first clearly understand the concept of a "district." Besides being geographical entities, containing a conglomeration of schools within certain boundaries, districts are also considered to be both legal and organizational entities. By state law, districts are required to educate all children living within its boundaries, and to do so uniformly across races, ethnicities, socioeconomic backgrounds, and in spite of disabilities. Organizationally, districts are responsible for the provision, monitoring, and improvement of such things as student transportation, facility maintenance, educational goals, professional development of teachers, and so on.

Beyond these simple descriptors, perceptions of districts' roles vary. In some states they are seen merely as bureaucratic or administrative entities, responsible for the enactment of state mandates. To others, their role focuses on resource allocation, distributing the county and bond measure funds to their schools of choice. More optimistically, and perhaps more accurately, an additional role of districts is that of a democratic institution. Through school board elections and bond levies local voters may express their opinions of, and approval or disapproval of, the local educational system (Hightower et. al. 2002). These multiple roles also demonstrate the variation that is possible at the district level and may be influential in school performance.

District Consolidation. Since the 1930s and 1940s, the US has seen a dramatic decrease in the number of school districts nationwide. With 128,000 districts in 1930, the number had dropped to less than 17,000 by 1975, despite a doubling of the number of students enrolled in public schools. The number of schools themselves also decreased (from 262,000 to 90,000) though to a far lesser degree than school districts (Forsythe et. al, 1998.).

Much of the district consolidation wave was motivated by the belief that larger districts would benefit from economies of scale, much in the same way as other organizational entities. Such a relationship proved to be far from evident. Some studies purport that no economies of scale exist in relation to district size, that spending patterns are reasonably uniform across all district sizes (Monk et al., 1997). Other studies show that moderately sized districts are ideal in terms of most cost measures, with economies of scale existing among only a few parameters (Garner, 1988). And yet others, such as a 1988 in-depth look at Nebraska district spending, find that economies of scale exist when districts are extremely small (below a district daily attendance of 400 students), but that the returns to scale quickly dissipate and become diseconomies of scale at higher levels (in Nebraska diseconomies of scale were observed when average daily attendance exceeded 1000) (Forsythe et. al., 1998). While the research on district size is far from conclusive, one thing that is evident is that larger districts are not, ceteris paribus, better than smaller districts.

Theory. In attempting to explain the relationship between school district size and educational quality, current theories and recent research are at times contradictory. Organizational theory predicts that larger school districts would benefit from economies of scale, using resources more efficiently. Larger districts would also be able to fund more programs, attract better teachers, and

enlist more subject area specialists (Monk et al., 1997). These factors may be assumed to produce a better educational experience, both in terms of student achievement and involvement.

This research will also be unique in that it will primarily compare outcomes from single-high-school-districts and dual-high-school districts (most districts—rural, suburban, and urban—in Oregon fall into one of these classifications). The theory would be that single-high-school-districts would encourage greater community integrations: resources and community support would not be divided among multiple schools but would be devoted to the single high school in the district.

Single-high-school-districts may encourage more efficient use of resources (physical and human capital), for such resources would be devoted entirely to the one high school in the districts. Schools in smaller district may be more closely monitored and tied to the community, stimulating higher levels of social capital and promoting positive measures of student outcomes.

Other Possible Predictors

Social Capital

Definition. Most literature on the topic of social capital, and particularly its influence on educational outcomes, attributes the concept to a 1988 study by James S. Coleman. In "Social Capital in the Creation of Human Capital," Coleman puts forth the theory that educational outcomes are supported not just by physical and human capital, but also by *social capital*. His explanation of the somewhat vague concept draws parallels to the two more widely understood forms of capital:

> "If physical capital is wholly tangible, being embodied in observable form, and human capital is less tangible, being embodied in the skills and knowledge acquired by an individual, social capital is less tangible yet, for it exists in the *relations* among persons. Just as physical capital and human capital facilitate productive activity, social capital does as well (Coleman, 1985, p. 100)."

Coleman goes on to provide an example of one way in which social capital produces such an effect. Groups rich in social capital exhibit, by definition, "extensive trustworthiness." This greater level of trust aids the group to be more productive than an otherwise similar group, whose only difference is their lesser degree of social capital (Coleman, 1988, p. 101).

In the two decades since Coleman's study, many other researchers have sought to replicate his research, and in doing so provided their own variations to the definition of "social capital." One of the most comprehensible definitions explains social capital as a "set of supportive interpersonal interactions that exists in the family and community (Israel et al., 2001, p. 44)." Preferring a more

quantifiable measure for his study of the development of at-risk youth, Furstenberg (1995) explained social capital as "forms of social organization that produce something of value for the individuals involved."

Social Capital and Academic Performance. Coleman's 1988 study, and those that followed, sought not just to explain the concept of social capital, but to investigate how varying levels of social capital affect the educational outcomes of students in the community. For Coleman, educational outcomes were measured by the dropout rates for high school sophomores at 893 public schools and 111 private schools across the U.S. His measures of social capital were broken down into three categories: 1) Obligations and expectations, 2) Information channels, and 3) Positive social norms, accompanied by sanctions. Higher measures of any or all of these three categories equated to higher social capital for the students at the particular school. Holding all other factors constant (essentially the physical and human capital of the schools and families), Coleman found that private catholic schools exhibited lower drop-out rates than other private or public schools. This difference, he concluded, was attributable to the higher levels of social capital available to the private catholic school students.

While providing an interesting starting point for the discussion of social capital and academic outcomes, Coleman's study can hardly stand alone. Dropout rates are a crude measure of "academic outcomes," for they say little about the actual academic achievement. Additionally, despite controlling for "all other factors," it seems counterintuitive to conclude that public and private catholic schools do not differ systematically in other immeasurable ways.

In the years since Coleman's study, many other researchers have explored his theories, taking into account the limitations of the original study. Such investigations have looked at outcomes for public school students, measuring outcomes in grades attained, school retention, high school completion, and standardized test scores. (Israel et al., 2001; Furstenberg, 1995; and John, 2005 respectively). All found relationships consistent with Coleman's theory: grades, school retention, graduation rates, and test scores tended to be higher for those students with greater levels of social capital.

A particular point of interest is the differential affect that social capital appears to have on outcomes, *depending on* the physical and human capital available to students. Various studies have noted that the positive effects of social capital are more pronounced for students coming from more disadvantaged backgrounds (Furstenberg, 1995; Israel et al., 2001; John, 2005; Runyan, 1998).

Runyan, who concluded that social capital may positively influence educational outcomes as early as pre-school, noted that such social capital may be "especially crucial" for students from less educated and poorer families (Runyan 1998). The same conclusion was reached by Furstenberg, who conducted a 20-year longitudinal study of children born to teen mothers in Baltimore. Higher levels of social capital, concluded Furstenberg may explain why some economically disadvantaged students are able to "beat the odds" in terms of academic achievement and economic outcomes (Furstenberg 1995).[2]

As illustrated, one of the main constraints in researching the effect of social capital lies in its intangible, hard to quantify, nature. To overcome these constraints, many researchers (such as those mentioned above) tend towards broad or composite measures of social capital. This is somewhat problematic in that it oversimplifies the impact of social capital and leaves us uncertain as to the specific mechanisms of the effect.

One way to overcome such weaknesses is equate social capital to community integration (as done by Putnam 2000), or more generally, the sense of "collectiveness" of a community. Such community integration could be measured by involvement in different realms of the community, from civic and social organizations to athletic or religious groups. Political participation, measured either by electoral turnout or political engagement, may also serve as an appropriate measure of community integration, and in turn, social capital (Putnam 2000). For the case of academic outcomes, it thus also seems that electoral support for school bond levies may serve as an appropriate measure of community support and integration.

However, while community integration may seem to be the most simple and direct measure of a school's social capital, it is not necessarily the only measure. It is plausible that parental and student involvement in the schools also represent social capital available to a particular school and its students. Both types of involvement stimulate the creation "relationships with institutions in the community," one of the defining characteristics of social capital.

Community Integration. Arguably the most influential work in the study of community integration is that of Dr. Robert Putnam, Professor of Public Policy at Harvard University. He has found manifest relationships between his composite measure of community integration—which he refers

[2] Specific measures of "Outcomes of Youth in 1987" were: graduation from high school, enrollment in college, labor force participation, stable economic status, avoided live birth (for females), avoided criminal activity (for males), and robust mental health. High school graduation, college enrollment, labor force participation, and stable economic status were the most consistently significant, as related to social capital.

to simply as social capital[3]—and numerous measures of human welfare. Prominent among these measures of human welfare is education. In *Bowling Alone*, Putnam illustrates the positive and starkly linear relationship between social capital and educational performance, showing that states with higher social capital are practically guaranteed to exhibit higher educational performance of K-12 children (see Figure 3). Putnam even argues that these varying levels of social capital far outweigh the impact of varying class size, a measure that is most often assumed to be one of the most determinative in predicting student success.

Educational Performance and Social Capital (Putnam, 2000)

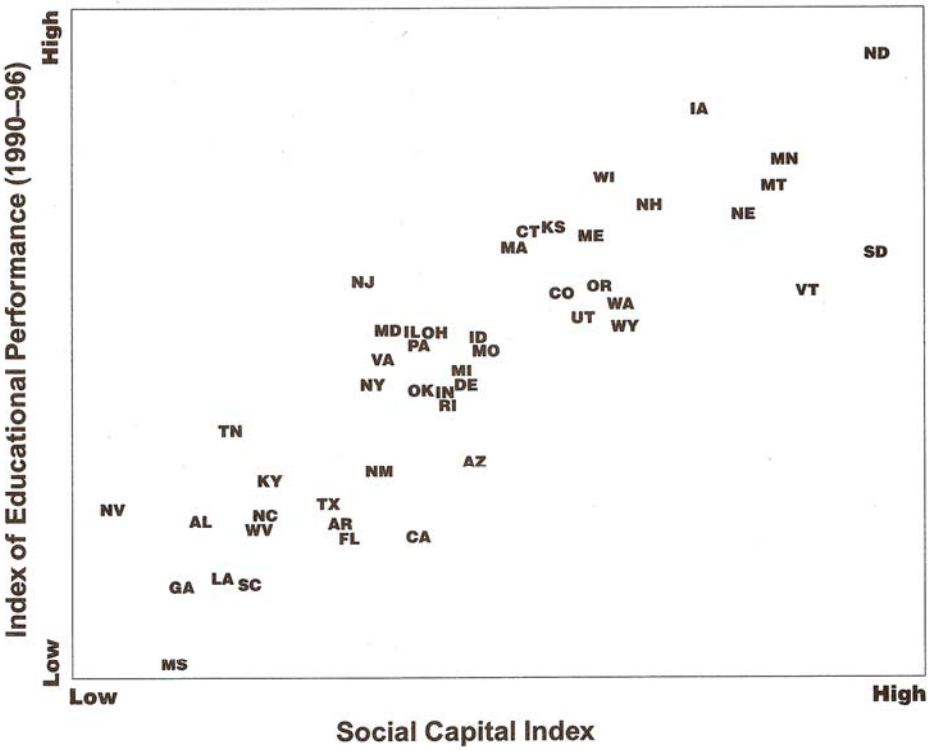


Figure 3. Relationship between Educational Performance and Social Capital From Putnam (2000). Illustrates the positive correlation between increased social capital and improved educational performance, but U.S. state.

While the Figure 3 paints a convincing image, it is in not to be taken as a panacea. The community-education relationship does not just operate in the abstract, with variations in the first leading to changes in the latter. Rather, Putnam explains, the observed relationship results from a mitigating mechanism. Civic engagement and community integration promotes "relational trust" and greater support for local schools. As Putnam writes, "Where there is a high level of trust among teachers, parents, and principals, these key players are more committed to the central tenants of

[3] High scores on Putnam's "Social Capital Index" refer to "states whose residents trust other people, join organizations, volunteer, vote, and socialize with friends (Putnam, 2000, pg. 296)."

school improvement…Even after taking into account all of the other factors that influence the odds of successful reform, trust remains a key ingredient (Putnam 305)."

Empirical research at the school and district level has demonstrated this relationship in action. The US Department of Education reports that community involvement--conceptualized as "community education," "community collaboration," or "community development and empowerment," depending on the study—is beneficial for children, youth, and schools (Sanders).

Community integration may influence academic outcomes in much the same way as does the human capital of students' parents. A more integrated community provides all students in the district with more performance-promoting resources than their identical peers in less-integrated communities. Such resources may range from more extra-familial social support to after-school programs and community donations to the school. Community integration may also convey higher expectations of students, in turn producing a positive relationship with student achievement.

Parental Involvement

Parental involvement has long been considered an important factor in the progress of students' academic achievement. This is evident by the prevalence of Parent Teacher Organizations and by the universal practice of periodic parent-teacher conferences. This well-known importance has been recently acknowledged by policy makers on the Federal level, with the passage of *The Goals 2000: Educate America Act*. This act has, at least nominally, "made parent's involvement in their children's education a national priority" (Kessler-Sklar & Baker, 2000).

The positive effect of parental involvement may operate through several mechanisms. Greater involvement by parents in decision making may help create more relevant programs, which are in turn more effective through continued parental involvement (Kessler-Skalar & Baker, 2000). Similarly, this cohesion between schools, teachers, and parents helps to establish unified goals between the three players. For instance, a school and its teachers may have high expectations, set ambitious achievement standards for its students, and pursue these goals collectively. However, if parents' own expectations of their children are far misaligned with those of the educators, even the best schools may suffer in terms of achievement (Comer and Haynes, 1991). Greater parental involvement, especially in terms of parent-teacher communication (through conferences and the like), is essential for the unification of these goals.

Parental involvement, especially in terms of parent-teacher conferences, may also operate in a more individualized fashion. Communication with teachers helps parents to understand specific

ways in which they can help their child succeed in school (Baker 1997). The significance of this effect has been recognized by several studies over the last three decades. A general increase in "parent-school connectivity" has been found to be correlated with lower drop-out rates (Teachman, Paasch, & Carver, 1996) while individualized parent-teacher communication has shown to promote academic achievement, as well as improved students' attitudes and behavior within the classroom (Epstein, 1985).

Effecting student outcomes less directly is the impact that parent involvement appears to have on student morale. Sui-Chu and Willms (1996) found that parent participation in the schools tended to produce higher reading test scores, but the most effect was seen in students' attitudes towards school. Specifically, greater parental involvement seemed to aid in lowering absenteeism, reducing drop-out rates, and improving students' homework habits (Sui-Chu & Willms, 1996).

With the potential to operate through multiple mechanisms—the creation of more effective academic programs, a unification of high expectations, and transmission of school goals into the homes—the expected effect of parental involvement is clear. We would expect more parental involvement to lead to better academic outcomes, whether measured in graduation rates or test scores

Student Involvement

Upon first considering the topic of extra-curricular activities, one might predict involvement in such activities to have a negative impact on student performance. Greater involvement in such activities would imply less time devoted to school-work; higher funding for sports and clubs may avert money away from classrooms and supplies. However, contemporary research has consistently found the opposite to be true. Greater involvement in extracurricular activities is consistently linked to better high school outcomes, whether measured as academic achievement, social adjustment, or high school completion (Guest & Schneider, 2003). More specifically, athletic participation has been proven to help lessen unexcused absences and raise academic expectations, even when controlling those factors which influence involvement in sports (Videon, 2002).

This conclusion is reinforced by the work of Broh (2002). Using longitudinal data from schools across the U.S. and controlling for demographic and school factors, Broh evaluated the impact of extracurricular involvement on academic achievement. Consistent with previous studies, extra-curricular involvement, such as participation in sports, raised achievement within the classroom and on standardized math tests. Broh's proposed explanation aligns perfectly with the

theory of social capital. Sports, he explains, may help build social capital though social ties with school personnel (such as teachers and administrators who coach or attend school-affiliated athletic events). It is through this creation of social capital that athletic participation may positively influence academic outcomes (Broh, 2002).

While these findings are relatively consistent across studies, it is also vital to note the effect of context. According to a study of 10th through 12th graders at 13 schools across the country, the relationship between athletic involvement and test scores may depend upon the income level of the students in the school. The study by Guest and Schneider (2003) concluded that athletic involvement is consistently associated with better academic performance of students in lower and middle class schools, but that upper income schools do not always exhibit the same relationship.

In spite of Involvement in extracurricular activities may help promote high school students' interest in school, promoting attendance and retention, and consequently resulting in better academic outcomes. Involvement in such activities may also help students acquire additional skills, such as time-management and performance under pressure, which in turn promote academic success.

Hypotheses

As modeled by Pincus & Rolph (1986) and others, school outcomes may be represented as a function of several inputs. These include those factors discussed in the previous chapters: school inputs, demographic factors, community inputs, parental inputs, student involvement, and district characteristics. This functional relationship can be represented by Figure 4 (following page), which lists these inputs and the measures used for each.

According to past research and the theories discussed, it is predicted that school outcomes (whether measured in graduation rates, reading test scores, or math scores) will be seen to vary with measures of each of the six general inputs. More specifically, we would expect to see the following relationships between each variable and student success:

Positive relationship (higher values of the variable associated with better school outcomes):

- Percent of classes taught by "Highly Qualified" teachers
- Median income in the district
- Presence of business and community partnerships
- Bond measure support
- Parent-teacher conference attendance
- Presence of PTA and/or Booster clubs
- Number of parent volunteers
- Percent of students involved in sports

Negative relationship:

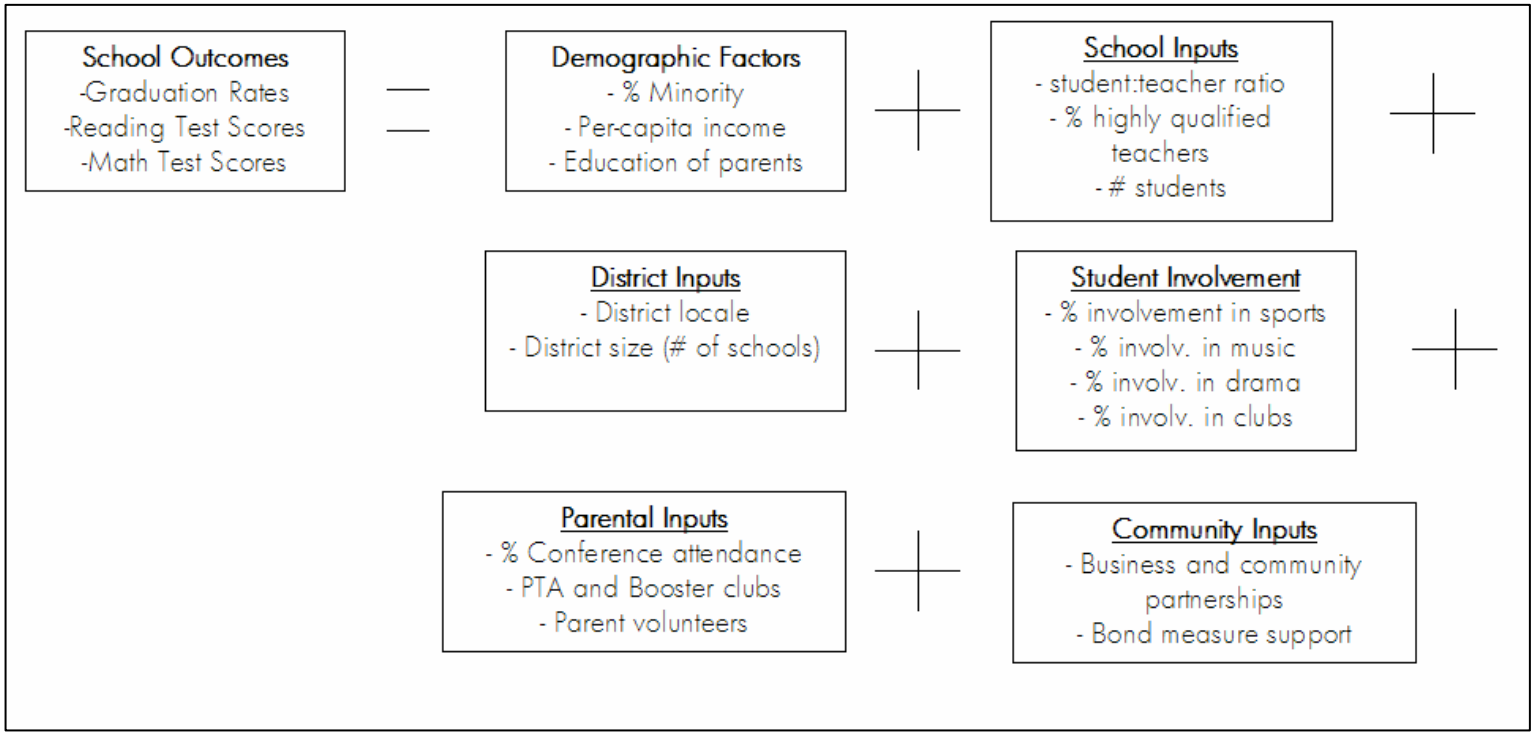
- Student-teacher ratio (higher student teacher ratio expected to produce worse outcomes)
- Percent of students classified as African American, Hispanic, and ESL

Uncertain relationship:

- District size (larger district predicted to produce worse outcomes). Research has been inconclusive; there are neither unambiguous economies of scale nor clear benefits from smaller districts.

Due to the constraints of the data, it is impossible to predict the strengths of the relationships between each factor and each measure of outcomes. It is unlikely that a given input exhibits the same magnitude of an effect on both graduation rates and test scores. However, based on research and theory, it is expected that the direction of these relationships will be consistent across all three measures of school outcomes.

Figure 4. Production Function for School Outcomes



Methods and Data

Scope of Research

In order to control for variation caused by geography and variances in culture, and to facilitate data collection, one state served as the focus of this study. The research focused on 172 public school districts in the state of Oregon and the high schools within these districts. The study was essentially a census of all multi-school districts in Oregon. Those districts—of which there were few—which included no high schools or were comprised of a single K-12 school were excluded.

Oregon provided an ideal scope of study for this research question for many reasons, including but not limited to:

- **Researcher's familiarity with the culture**, demographics, and educational system of the state.
- **Uniform graduation and academic standards**[4]. By focusing on just one state, can largely avoid bias that may occur from variation in graduation standards among the schools and districts being compared.
- **Very few private schools**. The entire state of Oregon has only two large private high schools, both of which are located in the largest city (Portland). Relative to many other states, the overall percentage of students enrolled in private schools is incredibly low, lessening the likelihood of such attendance skewing the results of the data.
- **"Median" state**. In terms of many of the demographic factors that are said to influence school and student performance, Oregon is decidedly "the median" relative to other states. Oregon is the 25th state in terms of income (i.e. the median)[5] and 26th state in terms of educational attainment[6]. This implies less risk of bias and implies that any significant results may be more generalizeable to other areas.
- **Available data**. The Oregon Department of Education collects annual data on all schools under their jurisdiction and makes this data available to the public. Annual "Report Cards" are available on every school and district, including data such as graduation rates, attendance rates, bond measure support, and more. The Oregon Department of Education website also provides contact information for all principals and superintendents in the state, facilitating further data collection.
- **School district organization**. School districts in Oregon fall into three categories: one-high-school districts, two-high-school districts, and multiple-high-school districts. Most districts fall into one of the first two categorizations. These categorizations are not determined by the districts' location in rural, suburban, or urban areas. This contrasts with the perception (which if true, would skew results), that more densely populated areas would automatically have larger districts.

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[4] In Oregon, students must successfully complete a *minimum* of: 3 credits language arts; 2 credits mathematics; 2 credits science; 3 credits social sciences; 1 credit applied arts, fine arts, or second language; 1 credit physical education; 1 credit health education; additional credits to fulfill district requirements. One credit equates to a one-year long class, completed with a passing grade. (Oregon Department of Education website: http://www.ode.state.or.us/teachlearn/certificates/diploma/diploma-at-a-glance.pdf)

[5] Three-Year-Average Median Household Income by State: 2000-2002. *US Census Bureau.* www.census.gov

[6] U.S. Census Bureau, Current Population Survey, Annual Social and Economic Supplement, 2003. http://www.census.gov/prod/2004pubs/p20-550.pdf

Sources of Data

1. Adequate Yearly Progress (AYP) Reports from OR Department of Education

As mandated by SB 1329 (passed in 1999 by the Oregon State Legislature and revised in 2001)[7], the Oregon Department of Education (ODE) now completes annual reports on all public school districts and public schools in the state. These reports are sent to the respective schools and districts (who then distribute them to parents) and are available to the general public on the web (http://www.ode.state.or.us/search/results/?id=116). Since *No Child Left Behind*, all states are now required to complete such reports, referred to as "Adequate Yearly Progress (AYP) Report Cards." These reports are designed to giver a general overview of the performance of the school and its progress over the past three years.

Variables provided by the ODE, to be used in this study:

A. District Variables[8]

- Direct classroom spending (in average dollars per student per year)
- Total annual per-student spending
- The number of bond measure[9] elections during the past three years (2003, 2004, 2005) and the number which successfully passed

B. School Variables[10] (High Schools only)

- Number of students in the high school
- Proportion of students in an ESL program (English as a Second Language)
- Number of diplomas awarded in the 04-05 school year
- Proportion of classes taught by a "highly qualified teacher"[11]
- Proportion of students who meet or exceed the state standard in reading and math.
- Attendance and drop-out rates for the 2004-2005 school year.

2. CCD Reports

The Institute of Education Sciences (IES) was established by The Education Sciences Reform Act of 2002. A part of the U.S. Department of Education, the mission of IES is to bring "rigorous and relevant research, evaluation and statistics to our nation's education system."[12] IES maintains the Common Core of Data (CCD) a publicly available database on all schools and districts in the country. CCD data is collected annually by the National Center for Education Statistics, a division of the IES.[13] Website users can access individual school or district reports or construct tables from the many variables in the database. Reports and tables also include data from the most recent U.S. census, which is currently from the year 2000.

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[7] "Background on the Oregon Report Card." Oregon Department of Education website. http://www.ode.state.or.us/search/page/?id=389
[8] From the 2005-2006 AYP District Reports, available at: http://www.ode.state.or.us/data/reportcard/reports.aspx
[9] See Glossary for precise definition.
[10] From the 2005-2006 AYP School Reports, available at: http://www.ode.state.or.us/data/reportcard/reports.aspx
[11] As determined by the *No Child Left Behind Act* standards
[12] More information available on the IES website: http://ies.ed.gov/
[13] Common Core of Data information available at: http://nces.ed.gov/ccd/

District Variables

- Total number of schools in the district
- Number of schools educating high-school students
  - Mainstream 9-12 grade schools (the majority)
  - Alternative high schools (such as vocational schools)
  - Charter schools (of which there were few, and generally covered a larger grade range than 9-12. Elementary-only charter schools were not included in this count).
  - Joint Middle-High Schools (grade 6-12 or 7-12 schools)
  - K-12 schools
- Total number of students in the district
- Proportion of district funding from federal, state, and local sources
- Demographics—% white (non Hispanic), % Hispanic/Latino, % African American, % Asian, % Other—of the under age 18 population in the school

3. High School Principals Survey

A two-page survey was sent, via mail and email, to all principals of 9-12 grade high schools in Oregon. Principals were given two options for responding: mail (postage pre-paid) or email. An email reminder was sent to all principals approximately 10 days after the surveys were received by mail. While the response rate was somewhat low (56 return for a rate of 30%), it provided sufficient data on community, parental and student involvement. Given the common concern with low turnout—a selection bias—several 2-sample t-tests were conducted to measure for such bias. Average graduation rates, reading test scores, and math test scores were statistically identical between the response and non-response groups. Respondent schools tended to be *slightly* smaller, on average, but were statistically identical in all other ways (student: teacher ratio, % teachers HQ, parental education, etc; see Appendix II for calculations).

The purpose was to measure those factors that could not be adequately represented by the secondary data sources already available. Specifically, this included student involvement, parental involvement, community programs, and informal financial support. (For the actual survey, see appendix I). Variables provided by the survey included:

A. Student Involvement

- Approximate student involvement (in terms of % of student body) involved in school sports, drama, music, and clubs.

B. Parental Involvement

- Whether or not the school has a PTA (Parent-Teacher Association), the approximate membership of this organization, and the approximate value of annual funds raised by the PTA.
- Proportion of parents who attend parent-teacher conferences
- Number of parents who volunteer in the school (annually)

C. Community Programs

- Whether the school has programs facilitating interaction between students and the community (internship program, job-shadow program, school-organized community service/volunteer work, guest speeches or lessons from business and/or community members, etc.).
- Number of community members (not parents of current students) who volunteer in the school
- Whether or not the school does any "regular fundraisers addressing needs in the community" and the approximate value of these donations to the community.
- Methods the school uses to keep community members aware of school happenings.
- Significant business and/or community partnerships

D. Financial Support

- Whether or not the school has a Booster Club and its approximate membership.
- The total annual value of Booster Club finds and the ways in which these funds are spent.
- Other ways that the school solicits community donations and the approximate value of these donations.

Operationalization

School Outcomes

Test scores. Test performance will be measured by the percent of students who meet or exceed the state benchmark, in 10th grade, on the state-wide 10th grade reading and math tests. Percentages for each subject, at each high school, are available from the AYP school reports.

Graduation Rates. Calculated using the standard equation for graduation rates.[14] Counts of 2004-05 graduates, student body size, and dropout rates, were compiled from the AYP school reports.

School Inputs

Those characteristics of the school which are most likely to influence student outcomes must be included. These include:

- Student-teacher ratio, measured by the number of students per each full-time (1 FTE) teacher at the school
- Qualifications of the teachers, measured by the percentage of classes taught by "Highly qualified (HQ) teachers." HQ is an official term used in the *No Child Left Behind Act*, which provides detailed specifications on the requirements to become "Highly Qualified."[15]
- School size, a standard control in studies of school outcomes.

Demographics

Three demographic factors are of great significance in this study: racial/ethnic minority status, family income, and the education level of the students' parents. These factors will be operationalized using data from the CCD school reports, respectively.

[14] See Appendix I for more information.

- Proportions of racial/ethnic minority in each school (African American, Hispanic, Asian or Pacific Islander, and American Indian/Alaskan Native or other.
- Income will be measured as the per-capita income within each school district.
- Education of the parents will be represented by the percent of adults, within each district, who have attained a college degree (Bachelor's degree or higher).

District Characteristics

- District Locale- whether the district is located within a rural, urban (large city), suburban, or mid-size city area.
- District Size- classified as falling into one of three possible categories: districts with one grades 9-12 high school, districts with 2 high schools, or districts with 3 or more high schools.

Community Integration

The High School Principals survey provided several possible measures of community integration, with the best being "Existence of business or community partnerships with the school." Survey responses to this question were much more consistent and reliable. Since respondents were also asked to provide examples of such programs (if they were present in their school), it was easy to determine the validity of affirmative responses. Business and community partnerships were combined into a single dummy variable, with (1) representing the presence of any such programs in the school and (0) representing no such programs.

Bond measure support (whether bond measures within the past three years have passed) may indicate the degree to which the community maintains a vested interest in the local schools. It is thus included as a second indicator of community integration.

Parental Involvement

Three measures used, all collected from the survey of principals:

- Parent-Teacher conferences attendance: Percent of parents who attend conferences each year
- Parent volunteers: Approximate total number of parents who volunteered in the school during 2005-2006 school year.
- PTA or Booster Club: Dummy variable, whether or not there is a PTA and/or Booster Club at the high school.

Student Involvement

Student involvement will be measured by percent involvement in sports, drama programs, music programs, and clubs, as reported in the principal surveys. Principals were asked to report the approximate proportion of their student body that was involved in each independent activity during the 2005-2006 school year.

Results

Regression Analysis

Using Minitab statistical software, multiple linear regressions were run in correspondence to the theoretical models presented earlier. Coefficients were generally consistent in their signs but varied in statistical significance (p-Value) depending on the combination of predictors employed in the specific regression.

Three issues presented challenges to the regression analysis, making it necessary to disregard some of the variables that had been included in the theoretical model. The first of these was the survey response rate. At approximately 30%, the survey response rate provided enough observations to be used in analysis but was far from optimal. Additionally, some survey questions were systematically left blank (such as counts of community and parental volunteers), making it impossible to use these measures in the data analysis. Due to data-quality concerns, the following variable were excluded from analysis:

- Per-student spending- Such a measure would have served as a useful control, despite the debate over the actual significance of funding levels on outcomes. Only district-level measures of funding were available, and were thus not adequate for a school-level analysis.
- Other types of schools in the district- Few districts have many, if any, charter, private, or K-12 schools. In order to streamline the analysis, counts of other schools were excluded from linear regressions.
- Other extra-curricular activities- Student body involvement in music, drama, and clubs were frequently less reported than sports involvement (approximately 30% of survey respondents did not report on student body participation in these activities). Beyond this concern, it was realized that rates of involvement for such activities may suffer from a variety of distortionary factors. The first of these is school size. Even many of the smallest schools in Oregon have school-affiliated sports teams. Comprehensive music and drama programs are less common. Secondly is the issue of funding. Athletic programs in Oregon tend to be somewhat insulated against the effect of budget cuts, whereas drama and music programs often seem to be the first to be cut. Participation in drama and music programs may be skewed by variances in school funding, while athletic participation is less distorted by this factor.

The second challenge concerned the "district characteristics" variables. While "district size" and "district locale" did not exhibit *consistent* high intercorrelations, a spurious relationship was created by the presence of a third. "Percentage of adults college educated" was highly correlated with district locale and district size (see Table 1). Due to this interaction, the district characteristics variables had to be excluded from the final regressions.

Table 1. District - Education correlations

	Rural	Urban	Suburban	Midsize city	% College educated
1 HS	0.325***	-0.162**	0.096	-0.471*	-0.403*
2 HS	-0.279***	-0.082	0.107	0.302*	0.269*
3+ HS	-0.369***	0.304***	-0.069	0.416*	0.410*
% College educated	-0.533***	0.229***	0.292*	0.241*	

***p=0.001, **=p=.05

Also due to relatively high intercorrelations, "per-capita income" and "% college educated could not be included in the same regression (Pearson correlation of 0.769, p=0.001). As found in previous studies and in the multiple regressions run in this analysis, the education level proved to be more consistently statistically significant. It was determined to be a better indicator of parental human capital, relative to income, and was thus included in the final regressions. The other essential demographic factor, "% of students ESL," was not highly correlated with the measure of adult education, and could thus be included together in the same regression.

Bond measure support presented an additional challenge to the data analysis. In the original data coding, bond measure support was represented as the proportion of bond measures that have based in the last three election years (either 0.0, 0.5, or 1.0). Those districts which had no bond measures on the ballot during those three years were indicated as having a missing value in this variable. This created two severe problems. First, having no bond measure is not equivalent to a missing variable; coding it as such created a systematic bias. Secondly, this method of coding resulted in so many cases having missing variables (either from the bond measure variable or a survey variable), that there were an insufficient number of complete cases to run the regression analysis. This obstacle was overcome with a simple re-coding of the bond measure data. Two dummy variables were assigned to the bond measure data: whether the district had any bond measures on the ballot within the last three years ("Bond measure dummy") and whether, given that fact, a bond measure had been passed during that period ("Bond measure passed"). This re-coding

greatly improved the validity of the bond measure variable and enabled it to be included in the final regression analysis.

Table 2. Descriptive Statistics.

Variable	# Obs.	Mean	SE Mean	Standard Dev.	Minimum	Maximum
Outcome measures						
Graduation rate	183	86.82%	0.656	8.87	60.99%	100%
Reading scores- % meet or exceed	187	57.36%	1.01	13.76	17%	95%
Math scores- % M or E	187	47.42%	1.06	14.45	9.00%	86.00%
School Inputs						
Student: teacher ratio	186	18.142	0.27	3.716	7.8	31.5
% classes taught by HQ	187	91.36%	1.56	0.13	41.70%	100.00%
School Size (# students)	187	842.00	46.10	630.80	43	2648
Demographic Inputs						
% African American	188	2.04%	0.424	5.2	0.00%	65.30%
% Hispanic	188	9.87%	0.816	11.182	0.00%	66.00%
% ESL[1]	189	5.08%	0.59	8.136	0.00%	52.20%
% Asian/Pacific Islander	188	3.06%	0.266	3.653	0.00%	24.10%
% Am Indian/Alaskan Native, or other minority	188	2.83%	0.362	4.965	0.00%	39.30%
% Adults college educated	183	28.83%	1.06	14.35	9.02%	90.26%
Community Inputs						
Business or Community partnerships (Dummy Variable)[2]	53[3]	0.774				
Bond measure dummy (Dummy Variable) [2]	189	0.312				
Bond measure passed (Dummy Variable) [2]	189	0.175				
Parental Inputs						
% Conference attendance	51[3]	38.42%	2.63	18.77	4.00%	90.00%
PTA or Booster club (Dummy Variable) [2]	57[3]	0.825				
Student Involvement						
% Involved in sports	49[3]	48.80%	0.02	0.172	0.00%	80.00%
District Characteristics						
Rural	189	52.38%		Refer to % of schools in each		
Urban	189	4.76%		category.		
Suburban	189	27.51%				
Midsize city	189	15.34%				
1 HS District	187	57.75%				
2 HS District	187	11.76%				
3+ HS District	187	21.93%				

[1]ESL and Hispanic were not included in the same regression, due to the obvious overlap. However, it is important to note the percentage of ESL students, which indicates a learning disadvantage, versus the "Hispanic" grouping which refers only to race/ethnicity.

[2]Means of dummy variables represent the percentage of observations which possess that variable.

[3] Missing data in these variables was recoded to improve the statistical power of the regressions. Business or Community Partnerships, Bond measure passed, % Conference Attendance, PTA or Booster Club, and % Involved in Sports were transformed into two variables each. The first variable indicated the original value of that variable, according to the principal surveys. Schools with no response were given a zero for the variable. The second variable, of the same name plus "dummy variable" indicated whether that school returned the survey or not. For example, a non-respondent to survey would receive "0" in value for %sports involvement, and "0" for sports dummy variable

Given these various constraints, final linear regressions were conducted for each of the three measures of school outcomes: **graduation rates**, **reading test scores** (% of 10th graders in the school who met or exceeded the state benchmark in 04-05), and **math test scores** (% 10th graders who met or exceeded the benchmark). Besides those variables which had to be excluded due to intercorrelations or missing variables, all of the predictors presented in the theoretical model were included in each regression (for descriptive statistics of each predictor, see Table 2). The strength and significance of each predictor varied depending on the outcomes measured, and are presented in the sections that follow.

Outcome: Graduation Rates

Table 3. Graduation Rate Linear Regression.

Predictor	Coefficient	SE Coef.	p-Value
School Inputs			
Student: teacher ratio	-0.118	0.237	0.626
% Classes taught by HQ teachers	0.074	0.074	0.319
School Size (# Students)	-0.003762**	0.0016	0.019
Demographic Inputs			
% African American	0.172	0.214	0.421
% Hispanic	-0.124**	0.061	0.045
% Asian or Pacific Islander	0.002	0.256	0.995
% Am. Indian, Alask. Native, or other minority	-0.178	0.130	0.170
% Adults college educated	0.126*	0.066	0.058
Community Inputs			
Business or Community partnerships	-1.009	3.019	0.739
Bus. or Com. Part. Dummy variable	-4.905	6.956	0.483
Bond measure passed	0.930	2.476	0.689
Bond measure dummy variable	3.271	1.998	0.104
Parental Inputs			
% Conference attendance	-0.083	0.068	0.226
% Conf. dummy variable	0.378	4.599	0.935
PTA or Booster club	-1.163	3.226	0.719
PTA or B. club dummy variable	6.410	8.478	0.451
Student Involvement			
% Involved in sports	2.522	8.772	0.774
% Inv. Sports dummy variable	0.981	5.198	0.851
Constant	82.184	6.840	0.000

*p=0.10, **p=0.05, ***P=0.001

R^2= 21.0% R^2(adj.)= 12.0% N= 176

Three predictors, falling into the categories of *school inputs* and *demographic inputs*, were found to exhibit a statistically significant relationship with graduation rates (see Table 3, following page). The education level of adults in the district (% adults college educated) and the size of the school (measuring community support and integration) each showed a statistically significant relationship with graduation rates, the first in a positive direction and the latter exhibiting a negative relationship ($p=0.1$ and $p=0.05$, respectively). As predicted, minority status exhibited a negative relationship with graduation rates ($p=0.05$), but *only* in terms of the proportion of the student body classified as Hispanic. One possible explanation for this is the residential transiency of some Hispanic families (families of migrant workers). This characteristic would be expected to have a significantly negative effect on high school completion (from higher rates of school withdrawal and dropping out), but would not be present in the other minority groups.

Of the measures employed, community inputs, parental inputs, and student involvement were all statistically insignificant in determining graduation rates in high schools. This was especially surprising for school and demographic inputs, for it indicated that smaller class sizes, higher federally-determined teacher qualifications, and fewer minority students do not necessarily relate to higher graduation rates in high schools.

Outcome: Reading Test Scores

Reading test scores were found to be statistically related to school inputs, demographic inputs, community inputs, and student involvement. While student-teacher ratios had shown to have no statistically significant impact on graduation rates, they did present a negative, statistically significant ($p=0.05$) relationship with reading test scores. Translated, fewer students per teacher is related to a higher percentage of students meeting or exceeding the state benchmark, holding all else constant. Like graduation rates, having more teachers classified as "Highly Qualified" did not predict higher reading test scores of students in the school while larger schools produced slightly better outcomes.

Higher percentages of both African American and Hispanic students were found to have a negative relationship with reading test scores ($p=0.001$). For Hispanic students in particular, this is not surprising. Many learned English as their second language and, in testing, are put at a disadvantage by this fact. They are less likely to meet or exceed the state benchmark, which is set for all students, regardless of whether their first language is English.

Parental education exhibited the expected positive relationship (p=0.001) while one measure for both community and parental inputs were also significant. Bond measure support, a measure of community integration, showed a slightly significant (p=0.10) positive correlation with test scores. Conference attendance, to the contrary, did not align with predictions. Conference attendance was statistically significant (p=0.05), but *negatively* correlated with reading test scores. One possible explanation of this finding is the following: perhaps conference attendance is a reactionary response to sub-par academic performance. Perhaps parents, especially in the case of high school students, are relatively more likely to attend conferences if their child has been observed to be performing poorly. The negative correlation would then be a result of lower levels of academic performance, but not due to a detrimental effect of conferences.

Table 4. Reading Test Scores Linear Regression.

Predictor	Coefficient	SE Coef.	p-Value
School Inputs			
Student: teacher ratio	-0.894**	0.303	0.004
% Classes taught by HQ teachers	-0.092	0.091	0.310
School Size (# Students)	0.006**	0.002	0.003
Demographic Inputs			
% African American	-0.508***	0.142	0.000
% Hispanic	-0.434***	0.077	0.000
% Asian or Pacific Islander	-0.426	0.299	0.156
% Am. Indian, Alask. Native, or other minority	-0.255	0.163	0.120
% Adults college educated	0.354***	0.078	0.000
Community Inputs			
Business or Community partnerships	-1.009	3.019	0.739
Bus. or Com. Part. Dummy variable	-4.905	6.956	0.483
Bond measure passed	5.021*	3.036	0.100
Bond measure dummy variable	-1.687	2.430	0.488
Parental Inputs			
% Conference attendance	-0.182**	0.086	0.036
% Conf. dummy variable	4.313	5.800	0.458
PTA or Booster club	0.291	0.4058	0.943
PTA or B. club dummy variable	13.470	10.670	0.209
Student Involvement			
% Involved in sports	24.040**	11.060	0.031
% Inv. Sports dummy variable	-14.734**	6.557	0.026
Constant	73.418***	8.404	0.000

*p=0.10, **p=0.05, ***P=0.001

R^2= 47.8% R^2(adj.)= 42.0% N= 180

Student involvement emerged as the most intriguing of the predictors of reading test scores. Involvement in sports was found to have a highly significant (p=0.05) positive relationship with test

scores. Schools with higher athletic participation (as a percentage of the student body) also had a higher percentage of students who, *ceteris paribus*, met or exceeded the 10th grade reading benchmark.

Contrasting with graduation rates, community inputs posed a statistically significant, positive relationship with academic outcomes; bond measure support was positively correlated with reading test scores. School size was again significant, but in contrast to graduation rates, exhibited a *positive* correlation with academic outcomes.

Outcome: Math Test Scores

Operationalized in the same fashion as reading test scores (% of 10th grade students who met or exceeded the 10th grade benchmark in 2004-2005), math scores showed the same consistent predictors. Each of the predictors of reading test scores, with the exception of bond measure support, were also statistically significant predictors of math scores. Specific coefficients differed slightly, but the directions of the relationships were consistent. Student: teacher ratio, percent Hispanic, and parental education level were most highly significant, with p=0.001.

Table 5. Math Test Scores Linear Regression.

Predictor	Coefficient	SE Coef.	p-Value
School Inputs			
Student: teacher ratio	-1.144***	0.343	0.001
% Classes taught by HQ teachers	0.003	0.103	0.979
School Size (# Students)	0.005**	0.002	0.040
Demographic Inputs			
% African American	-0.482**	0.160	0.003
% Hispanic	-0.318***	0.087	0.000
% Asian or Pacific Islander	0.222	0.339	0.514
% Am. Indian, Alask. Native, or other minority	-0.416**	0.185	0.025
% Adults college educated	0.356***	0.088	0.000
Community Inputs			
Business or Community partnerships	-2.773	4.313	0.521
Bus. or Com. Part. Dummy variable	-11.814	9.917	0.235
Bond measure passed	0.922	3.437	0.789
Bond measure dummy variable	2.983	2.751	0.280
Parental Inputs			
% Conference attendance	-0.184*	0.097	0.061
% Conf. dummy variable	2.973	6.567	0.651
PTA or Booster club	1.865	4.595	0.685
PTA or B. club dummy variable	17.230	12.080	0.156
Student Involvement			
% Involved in sports	26.180**	12.520	0.038
% Inv. Sports dummy variable	-13.647**	7.424	0.068
Constant	58.433***	9.515	0.000

*p=0.10, **p=0.05, ***P=0.001

R^2= 40.1% R^2(adj.)= 33.4% N= 180

Hispanic versus ESL

In the preliminary regression analyses only one measure of minority status, the percentage of student enrolled in English as a Second Language programs, had been employed. This decision had been made on two justifiable grounds. The first concerns the somewhat unique population distribution patterns in Oregon. Hispanics are by far the most prevalent minority group, their total count outnumbering all other minorities combined. Approximately 10% or the Oregon population is of Hispanic decent, a number that may be underestimated due to under-reporting of illegal immigrants. Asians compose the second-largest racial group, at 3.4%. Only 1.8% of the Oregon population is African American (2000 U.S. Census, www.census.gov). While Hispanic students are distributed somewhat uniformly across regions, the same cannot be said of the other minority groups. These groups are concentrated in a few select schools in urban (African American), suburban (Asian), and rural (American Indian) regions. The concern that this pattern would distort results, and the acknowledgement that Latino students were by far the most significant minority, motivated the original exclusion of non-Hispanic minority race.

Secondly, it was believed that percent ESL could provide a better measure of the actual disadvantages faced by some Hispanic students. Percent ESL provides a measure of the approximate proportion of a student body who does not speak English as their first language. Learning and testing in their second language would surely put these students at a disadvantage relative to all other students, including other Hispanic students who were born in the U.S.

Despite these justifications, using percent ESL presented certain tradeoffs, which were eventually determined to be too costly to justify the exclusion of other racial group measures. As discussed in the beginning of this study, racial minority status has *consistently* noted as significant predictors of academic outcomes. Excluding such variables, despite distributional concerns would mean excluding one of the most prominent variables in the topic of school outcomes.

Discussion

At least one measure of all of each general input proved to have a statistically significant relationship with high school student outcomes. The coefficient and significance levels of each indicator depended on the outcome being measured and the specific predictor employed, but the signs of each coefficient remained consistent. Some variables, such as percent African American, were statistically significant predictors of one outcome (such as test scores, in the case of % African American) but not of another (graduation rates), although the general category that the variable

represented (demographic factors) was significant in all cases. In order to better understand the results above, it is helpful to discuss each component of the school outcomes production function.

School Inputs

Two measures of school inputs, student-teacher ratio and teacher qualifications, proved to be of no significance to graduation rates. Lower student-teacher ratios did, however, predict better test scores; more qualified teachers did not. Larger schools appeared to produce slightly lower graduation rates but better outcomes in terms of test scores. Clearly, school inputs to influence student outcomes, but that influence depends upon the outcome which is measured.

The intuition behind this finding is clear. Better teacher and smaller classes imply that students are likely to be receiving better instruction and more individual attention. This would be expected to yield better academic performance, but may not necessarily be successful in keeping students in school, which may be overwhelmed by other external factors. Residential transiency and familial economic instability, for instance, may outweigh any positive effect that smaller class sizes could possibly have on graduation rates.

Insignificancy of "percentage of teachers Highly Qualified" may reflect a fallacy in the *NCLB* definition. "HQ" certification relies largely on formal subject-area education and performance on certification tests. While surely important, such a definition neglects the importance of *teaching* capability- teachers' ability to explain complicated concepts and maintain command of the classroom.

The findings regarding school size were somewhat surprising and should be interpreted cautiously. All schools fell within a relatively reasonable range (43 to 2648 students, with a mean of 842). *Within this range* larger schools may tend to produce slightly better outcomes, but such returns to scale may reverse at an upper bound beyond the constraints of this sample.

Demographic Factors

Demographic factors proved to be significant determinants of all measures of high school outcomes. The education level of the parents (measured by the % adults in the community with a college degree) was by far the *most* significant factor. Higher levels of education predicted both higher graduation rates and higher test scores. The influence of parental education probably operates through at least two modes, raising the academic expectations placed on students in that school and endowing those students with more resources, such as human and social capital. Higher expectations are probably of the greatest influence on graduation rates while more academic resources probably

exhibit a larger effect on test scores; this supposition presents an interesting topic for further research.

Minority status, in terms of percent Hispanic, influence both graduation rates and test scores; the proportion of the student body who were African American was only a predictor of average test scores. This conclusion is noteworthy, for it contradicts the public notion that minority groups are less likely to earn a high school diploma. Rather, it suggests that parental educational attainment, but not always ethnicity, is the significant demographic predictor of high school completion rates.

The relationship between the percentage of Hispanic students and test performance is unsurprising, but does not imply that schools with more these students are inherently less successful or that they are learning less than their peers. Rather, it is likely capturing the effect of the disadvantages placed Hispanic students, particularly those who are ESL, who must take the same test and are evaluated according to the same standard as their native-language peers.

Community Inputs

Community inputs, when measured in bond measure support, proved to be a slightly significant predictor of reading test scores. Schools with more community support produced, *ceterus paribus*, better reading scores. This community integration (i.e. *social* capital) likely operates in much the same way as parental education (*human* capital), enhancing resources available to students.

While significant, these results must be interpreted with caution. A large part of "the community" is indeed the parents of the students whose outcomes are being measured. Many of the community and business partnerships may have been initiated by parents, and thus be partially a measure of parental involvement and incompletely a measure of community integration. This possible interaction cannot be adequately measured within the constraints of this study, but may serve as an interesting topic for further investigation.

Similar concerns accompany the predictive validity attributed to bond measure support. Many voters are the parents of school-aged students in the district. Parents who place higher expectations on their child's academic outcomes may be more likely to support measures which allocate more resources to their child's school. In this sense, bond measure support would be a composite measure of community and parental support.

A second issue regarding bond measure support arises due to nature of this study. Being cross-sectional in nature, it is impossible to determine whether bond measure support *l*eads to

higher graduation rates, or whether higher graduation rates stimulate more bond measure support. This could be better evaluated with a longitudinal study of the same variables.

Parental Inputs

Of all the general factors evaluated, "parental inputs" was the only category that showed no not one positive, statistically significant, relationship with measures of school outcomes. This probably results more from limitations of the measures employed than from a complete lack of influence on students' academic success. Both PTAs and parent-teacher conferences are more common in primary schools than high schools, and thus may limit the predictive validity of each.

Despite the statistical insignificance of the measures of parental involvement, this does not prove that parental involvement plays no role in promoting academic outcomes of high schoolers. As discussed previously, measures of community integration which *were* found to be predictors of school outcomes, may actually represent *both* community and parental involvement in the schools.

Student Involvement

In accordance with the existing literature, involvement in sports was shown to be positively related to higher test scores, holding all else equal. It cannot be concluded that student involvement in sports "makes students smarter," but is likely that an underlying mechanism is at work. For example, athletic involvement stimulates the creation of social bonds with coaches and peers, stimulating the creation of social capital. Taking an alternative perspective, an argument could be made that involvement in extracurricular activities, such as sports, promotes better attitudes towards school, and in turn better academic outcomes. It is also plausible that the competitive nature and performance-under-stress aspect of athletics helps students to be better test takers, in turn producing better test scores in schools with more athletic involvement.

A note on causality

Due to the nature of the data used in this study, which was cross-sectional versus longitudinal, no conclusions can be made as to the *causal influence* of any of the five categories of inputs. It cannot be said, for instance, that districts with more highly educated adults will unequivocally produce more high school graduates. What can be concluded, within the constraints of the study, is that several types of factors are *related to* high school outcomes. Even without clear causality, the identification of such related factors may be utile for districts, schools, parents, and communities.

Conclusion

Summary of Findings

Limitations of the data and intercorrelations between some variables made it impossible to evaluate the impact of all factors that had been included in the hypothesized model. Significant colinearity between parental educational attainment and district characteristics necessitated the exclusion of both district variables (size and locale). Parental volunteers and involvement in non-athletic extra-curricular activities were also excluded, due to the poor quality of the reported data.

Despite these constraints, the hypothesized model was applied to the data with one to two measures of each category of inputs. Student-teacher ratio and school size, falling under the category of "school inputs," was found to be a statistically significant predictor of test scores. Teacher qualifications presented no such relationship. Only school size was related to graduation rates.

Several demographic factors (% African American, % Hispanic, and % college educated) were related to test scores. Hispanic minority status and parental educational attainment were also related to graduation rates. Community integration presented a positive relationship with reading test scores, but no such relationship with other outcome measures. Student involvement predicted better reading and math test scores, but was not related to graduation rates.

School inputs, demographic factors, community inputs, and student involvement were thus all shown to be positively related to at least one measure of school outcomes. Few of the expected predictors were of significance in predicting graduation rates, but test scores were well explained by the hypothesized model.

Policy Implications

The results of this study may be, at once, both discouraging and encouraging. At first glance the former is the case. Only two variables maintained predictive validity for all measures of student outcomes, with one being beyond the control of schools and policy makers: the educational attainment of students' parents. But this is not an end-all. Gradation rates and test scores measure different aspects of school success; the fact that they are related to diverse predictors should be expected.

The final results may fail to present policy makers with a simple route towards promoting *all* measures of academic achievement. However, general methods of increasing high school success may be formulated. An increased focus on integrating the community with the local high school(s)

may help promote graduation rates. This may be of even greater importance in regions with lower adult educational attainment levels.

Maintaining a reasonably low student-teacher ratio may be of particular importance in areas where students score lower on benchmark tests, such as regions with high proportions of ESL students or regions with lower average educational attainment. The promotion of athletic involvement may present additional benefits, equipping students with skills that are less easily attained within the confines of a classroom.

These results also demonstrate a more general—but equally significant—conclusion. As is evident, school outcomes are influenced by a variety of mitigating factors. It may be impossible to determine a specific policy that should be pursued in all schools, with the objective of boosting student achievement. A more appropriate course of action would be for high schools to be evaluated on the micro-level. Local policy makers should identify the characteristics present in individual high schools and the community, and considering these, pursue an improvement plan unique to the individual school

Appendix I: Definitions

Academic achievement. Most generally, progress by students in terms of knowledge and ability; the extent to which students are learning in school. No single measure provides a perfect indication of academic achievement, but standardized test scores, grades, graduation rates, problem-solving assignments, and teacher reports all provide insights into students' academic achievement.

Annual Yearly Progress (AYP) reports. As mandated by *No Child Left Behind*, these "report cards" must be completed and distributed each year, by each state's Department of Education. National Assessment of Educational Progress (NAEP) scores are reported for by overall and subgroup averages, for each district and individual school (Rudalevige, 2003). Subgroups include race/ethnicity (White, African American/Black, Hispanic, Asian/Pacific Islander, American Indian/Alaskan Native, Multi-Racial/Multi-Ethnic), Male, Female, Talented and Gifted, Students with Disabilities, Migrant students, Limited English Proficient, and Economically Disadvantaged) (www.ode.state.or.us).

Bond measure. Also called bond levies, refers to referendum placed on the local ballot, which seeks a temporary increase in property taxes in order to provide local schools with additional funding. Bond measures may be proposed for various reasons, including extra funding for building expansions or supplemental financial support during a state funding crisis.

Business or community partnerships. Refers to collaborations between the businesses or community organizations and the school. Some examples provided by survey respondents included: internship programs at the local hospital, job-shadows at nearby businesses, regular donations of supplementary supplies, and mentoring programs.

Conference attendance. Reported by high school principles, via the principals survey, as the approximate percentage of parents who attended parent-teacher conferences during the previous school year (2005-2006).

District size. Can be defined in at least three ways: geographical region, number of students, or number of schools. For the purpose of this study, the number of schools served as the main measure of comparing district size.

Dropouts. According to the Oregon Department of Education, a dropout is "as student who withdrew from school and did not graduate or transfer to another school that leads to graduation." Dropout rates do not include students who: are deceased, are being home schooled, are enrolled in an alternative school, are enrolled in a juvenile detention facility, are enrolled in a foreign exchange program, or those that are temporarily absent because of suspension, a family emergency, or severe health problems preventing them from attending school. Dropout rates also do not include students who have earned a GED certificate in place of a high school diploma, or those who earned a high school diploma from a community college. Rates are reported as total percentage of dropouts, in a given school, from July 1 to June 30 of the particular school year. The Average dropout rate in Oregon for the 2005-2006 school year was 4.1%. (Information available from the "Reports, Data and Statistics section of the ODE website: http://www.ode.state.or.us/search/page/?id=1).

English as a Second Language (ESL). Students who speak a native language other than English and are, in most cases, first-generation immigrants to the U.S. In Oregon, nearly all ESL

students are of Mexican decent. The "ESL" variable used in this study refers to the percentage of students, within a given school, who are enrolled in ESL programs.

Graduation Rate. Reports the number of high school completers who earn a regular diploma by the end of the given school year, as a percentage of their class. Oregon uses the following formula to calculate graduation rates:

Number of Regular Diplomas awarded

÷

Number of Regular Diplomas + Number of Dropouts for Grades 9-12 for the year.

(http://www.ode.state.or.us/search/results/?id=322)

Highly Qualified (HQ) Teachers. "Highly Qualified" is a term coined in the creation of the *No Child Left Behind* Act. The Federal act seeks to set uniform standards for educators in all states, termed "High Objective Uniform State Standards of Evaluation (HOUSSE). All public school teachers must hold at least a bachelor's degree, become licensed in the state, and pass all state-required certification tests to be considered "Highly Qualified." Additional requirements depend on the specific grade level and subject to be taught, as well as the teacher's past experience. (http://www.ed/gov/policy/elsec/leg/elsec/leg/esea02/pg107.html). Despite the attempted uniformity of standards, exact requirements for certification and necessary tests are left up to individual states. In Oregon, new teachers must hold a NCLB license, have a bachelor's degree, and have passed the Praxis subject-matter test or have completed an undergraduate major (or the coursework equivalent) in the subject in which they are seeking HQ status.
(More information available at http://www.tspc.state.or.us/pub.asp?op=0&id=50 and http://www.ode.state.or.us/apps/faqs/index.aspx?=106)

High School. Defined for the purposes of this study as a school which enrolls students from grades 9-12. Schools which enroll grades 6-12 or 7-12 were considered to be joint mid-high schools and excluded from the study, due to the concern that they would differ systematically from 9-12 grade schools.

Human capital. "A person's accumulate knowledge and skills (Taylor, 2004)." Often measured in education (such as years of schooling or degrees earned), on-the-job training, and work experience.

Math test scores. Percentage of 10^{th} grade students, in the particular high school, that met or exceeded the state assessment in mathematics for the 2005-2006 school year.

Median Income. The median income, according to the 2000 U.S. Census, of all adults residing within the confines of the particular school district.

Midsize city. The central city, with a population between 25,000 and 250,000, of a Core Based Statistical Area (CBSA).

No Child Left Behind (NCLB) Act. Signed into law in 2001, the *No Child Left Behind Act* (NCLB) has been referred to as the most important national education legislation since the 1960s. The legislation passed easily with broad bipartisan support (87-10 in the Senate, 381-41 in

the House of Representatives), and was eagerly signed by President George W. Bush, who had supported it from the beginning (Rudalevige, 2003).

NCLB is essentially a reauthorization, with significant revisions, of the Elementary and Secondary Education Act (ESEA), which had been in place since 1965 (Rudalevige, 2003). While ESEA directed more attention to the financial needs of schools in areas of low income and large minority populations, NCLB directs the focus to the achievement of theses schools as well. The 2001 act has focused on raising and homogenizing standards across schools, districts, and states. "Accountability" was introduced as a major facet of NCLB. Teacher compensation and school funding, it was decided, would be partially influenced by student performance on statewide assessment tests (West & Peterson, 2003).

While states are left some discretion in the formation of their standards, all are required to test all third through eighth grade students, each year, in reading in mathematics (West & Peterson, 2003). Schools and districts are expected to produce "Adequate Yearly Progress" for all subgroups; failing to do so for two consecutive years may result in "corrective actions," including staff replacement and school restructuring. NCLB also grants parents the right to move their child to a different school or district, if their original school is filing in terms of AYP (Rudalevige, 2003).

Parental involvement. Refers to parents' involvement *in the schools*. Measures considered and utilized include number of parents who volunteer in the school, whether there are parent-school organizations such as PTAs or Booster clubs, the membership numbers of such organizations, and the percentage of students who attend parent-teacher conferences.

Parent-teacher conferences. See conference attendance.

Percent African American. The proportion of individuals within the school who classified their race as "African American" on the 2000 U.S. Census.

Percent ESL. Percentage of students within the school who are enrolled in ESL programs. See *English as a Second Language (ESL)* above.

Percent Involvement in Sports. As reported by principals who responded to the *High Schools and the Community* survey, refers to "the approximate percentage of the student body that was involved in a school-sponsored sport during the 2005-2006 school year."

Percentage of parents college educated. Percent of all adults in the district who hold *at least* a bachelor's degree. Data was taken from the 2000 U.S. census, via the National Center for Education Statistics Common Core of Data. All categories were mutually exclusive, so that individuals who held a higher degree were not also counted as holding a lesser degree.

Physical capital. Those assets, such as funding, facilities, resources, and supplies which may be measured in financial terms.

PTA and/or Booster Club. Principals were asked to denote whether their school had a "PTA or similar organization" and whether their school had a Booster club. Many schools replied that they had both, or that they had one such organization that could be considered a PTA or a Booster Club. To prevent inconsistencies in the analysis, the measure of PTA or Booster club presence was thus combined into a single dummy variable, with 1 representing the

existence of both organization, or one of the two. A zero represented no such active organization at the high school.

Public School. Any non-private school, funded jointly by the federal, state, and local government.

Reading test scores. Percentage of 10th grade students, in the particular high school, that met or exceeded the state assessment in reading for the 2005-2006 school year.

Rural. A rural area, as defined by the U.S. census (sparsely populated) or a small town (population under 25,000 inhabitants), located outside of a Core Based Statistical Area.

Student: Teacher ratio. Calculated by dividing the total number of students at the high school by the total number of teachers (measured in FTE—or full time employment—points, with 1.0 equaling one full-time teacher). Administrators, classified personnel, and other non-classroom employees were *not* included in the ratio.

Suburban. On the urban fringe of a large or mid-sized city.

Test scores. See Math test scores and Reading test scores.

Urban. Within the central city, with a population of at least 250,000, of a Core Based Statistical Area (CBSA).

Appendix II: Tests of Response Bias

Boxplots of Outcome Variables.

As shown by the two-sample t-tests, there were no statistically significant differences between the outcome variable means of schools which completed the survey and those that did not. The following boxplots demonstrate this consistency, for outcome variables, in visual form.

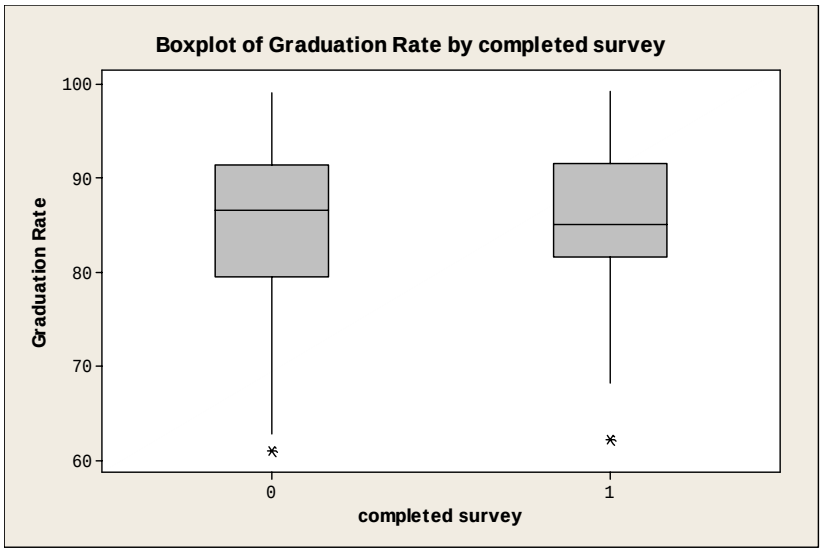

Figure A1. Boxplot of Graduation Rate by Completed Survey. Shows the mean and range of graduation rate for schools that returned the survey and for those that did not. Both the mean and range of graduation rates were similar, and not statistically different.

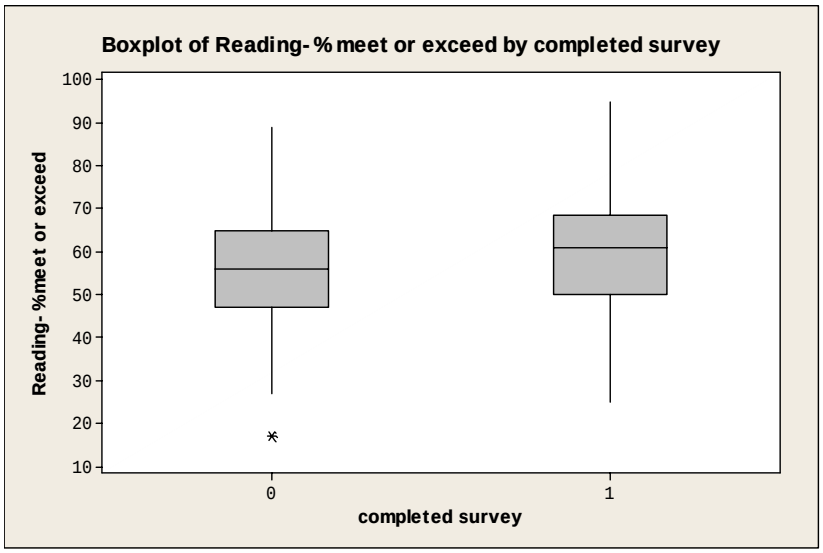

Figure A2. Boxplot of Percent Meet or Exceed State Reading Test by Completed Survey. Compares the mean percentage of students who meet or exceed the state standard in reading at schools who completed the survey and those that did not. No statistically significant difference between the samples.

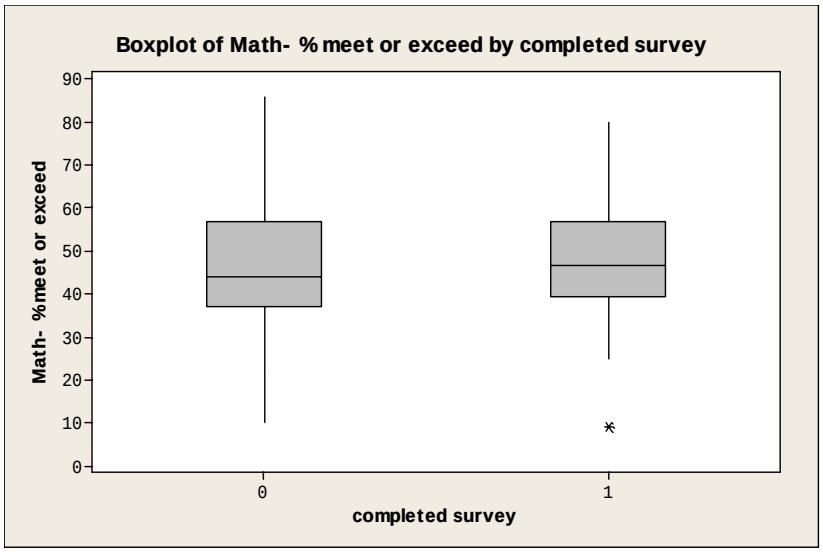

Figure A3. Boxplot of Percent Meet or Exceed State Math Test by Completed Survey. Compares the mean percentage of students who meet or exceed the state standard in math at schools who completed the survey and those that did not. No statistically significant difference between the samples.

In terms of predictor variables, respondent schools varied little from non-respondents According to the two-sample T-tests, respondent schools tended to be slightly smaller schools (mean of 590.1 versus 641.9 students) and have a slightly lower proportion of African American students (mean of 1.1% versus 2.4% of the student body). No other statistically significant differences were seen between the groups.

Appendix III: Alternate Regressions

As mentioned in the results section, regressions were originally run with %ESL as the only measure of minority students within each school. Results were generally consistent, with the exception of the community inputs variables. With all races included, bond-measure support was positively associated with reading test scores, a finding not replicated with the ESL specification. Including ESL, an alternative measure of community inputs—the presence of business or community partnerships—showed to be negatively related to reading test scores (p=0.10). This contradicts the predicted relationship, but may be explained in much the same way as the negative correlation of parent-teacher conferences and test scores.

Table A1. Graduation Rate Linear Regression-with ESL

Predictor	**Coefficient**	SE Coef.	**p-Value**
School Inputs			
Student: teacher ratio	-0.235	0.237	0.323
% Classes taught by HQ teachers	0.086	0.073	0.241
School Size (# Students)	-0.003**	0.001	0.051
Demographic Inputs			
% ESL**	-0.204	0.085	0.017
% Adults college educated	0.147**	0.060	0.015
Community Inputs			
Business or Community partnerships	-1.347	2.986	0.652
Bus. or Com. Part. Dummy variable	-5.235	6.855	0.446
Bond measure passed	0.106	2.444	0.965
Bond measure dummy variable	3.845*	1.991	0.055
Parental Inputs			
% Conference attendance	-0.075	0.068	0.271
% Conf. dummy variable	-0.310	4.576	0.946
PTA or Booster club	-0.902	3.186	0.778
PTA or B. club dummy variable	7.368	8.369	0.380
Student Involvement			
% Involved in sports	3.580	8.684	0.681
% Inv. Sports dummy variable	0.053	5.145	0.992
Constant	81.433***	6.713	0.000

R^2= 20.7% R^2(adj.)= 13.3% N= 176

Table A2. Reading Test Scores Linear Regression-with ESL

Predictor	Coefficient	SE Coef.	p-Value
School Inputs			
Student: teacher ratio	-1.034***	0.312	0.001
% Classes taught by HQ teachers	-0.086	0.095	0.371
School Size (# Students)	0.006**	0.002	0.003
Demographic Inputs			
% ESL	-0.573***	0.113	0.000
% Adults college educated	0.313***	0.075	0.000
Community Inputs			
Business or Community partnerships	-6.690*	4.011	0.097
Bus. or Com. Part. Dummy variable	-3.271	9.207	0.723
Bond measure passed	4.978	3.225	0.125
Bond measure dummy variable	-0.606	2.579	0.815
Parental Inputs			
% Conference attendance	-0.185**	0.097	0.043
% Conf. dummy variable	3.419	6.138	0.578
PTA or Booster club	-0.875	4.271	0.838
PTA or B. club dummy variable	17.760	11.240	0.116
Student Involvement			
% Involved in sports	26.850**	11.650	0.022
% Inv. Sports dummy variable	-16.950**	6.908	0.015
Constant	71.642***	8.821	0.000

R^2= 40.7% R^2(adj.)= 35.2% N= 180

Table A3. Math Test Scores Linear Regression-with ESL

Predictor	Coefficient	SE Coef.	p-Value
School Inputs			
Student: teacher ratio	-1.283***	0.351	0.000
% Classes taught by HQ teachers	0.017	0.107	0.874
School Size (# Students)	0.005**	0.002	0.030
Demographic Inputs			
% ESL	-0.345**	0.127	0.007
% Adults college educated	0.348***	0.084	0.000
Community Inputs			
Bus. or Community partnerships	-3.315	4.507	0.463
Bus. or Com. Part. Dummy variable	-12.670	10.350	0.222
Bond measure passed	1.262	3.623	0.728
Bond measure dummy variable	3.619	2.897	0.213
Parental Inputs			
% Conference attendance	-0.185*	0.102	0.072
% Conf. dummy variable	2.432	6.897	0.725
PTA or Booster club	0.797	4.799	0.868
PTA or B. club dummy variable	21.390*	12.630	0.092
Student Involvement			
% Involved in sports	28.750**	13.090	0.029
% Inv. Sports dummy variable	-15.617**	7.762	0.046
Constant	54.994	9.912	0.000

R^2= 33.0% R^2(adj.)= 26.8% N= 180

Appendix IV: Survey

Christy J. Paul

702 E. Buffalo St, Apt 9
Ithaca, NY 14850
Phone: 541.490.5330
Email: cjp45@cornell.edu

December 12, 2006

Dear Oregon Administrator,

I am writing to you today as a former Oregon student, extremely grateful for the quality education that I received, and as a researcher, interested in determining what contributes to the success of certain schools. I am currently completing my senior honors thesis, which looks at the interaction between community and district characteristics, and high school outcomes. Although I have attempted to gather a majority of my data from publicly available sources, the nature of the study requires that I also turn directly to the experts: you, the high school administrators. Thus, I have created a brief survey to measure those factors not easily found in public data.

Please note that I have done everything in my power to make it easier for the survey to be completed. I limited the questions to just two pages, which should take no more than 15 minutes to complete. If there are any questions to which you are unsure of the answer, do not hesitate to provide your best estimate or to skip them. Some answers are better than none, and any insight that you can provide is greatly appreciated. Also, although you are the only administrator at your school to have received this survey, you may have any administrator or knowledgeable school official fill out the survey.

I have included a stamped, self-addressed envelope with the survey in order to facilitate its return. Or, if you prefer, you may also reply by email (cjp45@cornell.edu). In order to provide time to compile and analyze the responses, it would be much appreciated if you could return the survey by December 18.

Many thanks for taking the time to read this letter and to complete the survey. Your time is extremely valuable and your insights priceless. Best wishes for the Holidays and the remainder of the school year.

Sincerely,

Christy J. Paul
Cornell University '07

High Schools and the Community

Name of High School: _____
School official completing survey: _____

For the following questions, please refer to the 2005-06 school year.

I. Student Involvement

1. *Approximately* what percentage of the total student body is involved in…
   a. at least one school-sponsored sport?_____%
   b. a school-sponsored drama program? _____%
   c. a school-sponsored music program (band, orchestra, choir, etc.)?_____%
   d. school clubs _____%

II. Parental Involvement

1. Does your school have a PTA or similar organization? Yes___ No___
   a. If yes, what is the approximate membership of the PTA? _____
   b. What is the approximate total annual value of funds raised by the PTA? $_____

2. Generally Speaking, how are PTA funds spent?_____
_____
_____

3. Approximately what percentage of parents attends parent-teacher conferences? _____

4. During one year, approximately how many parents volunteer in the school? _____

III. Community Programs

1. Please check any of the programs present at your school:
   ____ Internship program (one semester or more)
   ____ Job Shadow program (one week or less)
   ____ School-organized community service/volunteer work
   ____ Guest speeches/lessons by business/community members
   ____ Other (please explain) _____

2. Approximately how many community members, excluding parents, volunteer in the school?__

3. Does your school do any regular fundraisers addressing needs in the community?
   ____ No. ____ Yes. (Please explain)_____
   _____
   _____
   What is the approximate value of these donations to the community? $_____

4. How does your school keep community members aware of school happenings? _____
_____
_____
5. Does your school have any significant *business partnerships*? If so, please explain:_____
_____
_____

6. Does your school have any significant *community partnership* programs? If so, please explain:
_____
_____
_____

IV. Financial Support

1. Does your school have a Booster Club or similar organization?
   ____ Yes, a Booster Club or similar organization
   ____ No such organization.

2. What is the approximate membership of the Booster Club?
   _____ Community members/parents
   _____ Businesses

3. What is the approximate total annual value of funds raised by the Booster Club $_____

4. Generally speaking, how are Booster Club funds spent?_____
_____
_____

5. In what other ways does your school solicit funding and donations from community and/or business sources?_____
_____
_____

6. Exclusive of Booster Club funding, what is the approximate annual value of community donations to the high school? $_____

■■■

Many thanks for taking the time to respond to this questionnaire. If you are interested in receiving a copy of the final report, to be completed in April 2006, please provide us with your preferred email address.

____ Yes, I would like a copy of the report. My email address is: _____

■■■

Please return by December 11 to Christy Paul, 702 E. Buffalo, #9, Ithaca, NY 14850, or by email to cjp45@cornell.edu

If you have any questions, please do not hesitate to call Christy at 541-490-5330.

Citations

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Acknowledgements

■■■

First and foremost, I would like to thank the nearly 60 high school administrators from the state of Oregon who took time the time to respond to the "Principals" survey. You voluntarily completed the survey, despite full schedules and a hectic school year, and your contribution cannot go unmentioned. This report would not have been possible without your help.

Secondly, I would like to thank Professors William Rosen and Rachel Dunifon, Department of Policy Analysis and Management, Cornell University. Your consistent and continuing guidance in the progression of this study has been invaluable.

And finally, a word of appreciation to Professors Jennifer Gerner, Professor Rosemary Avery, and Bart Linehan, Ed.D., whose comments and advice aided in the development and completion of this study.

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